

What we Claim is:

1. A method for finishing an attachment gusset for a mattress, comprising:

feeding a length of gusset material from a supply;

receiving and directing the gusset material through a folder assembly into a sewing zone in a substantially flat lying attitude into engagement with a panel;

attaching the gusset material about a peripheral edge of the panel;

as a corner of the panel approaches the sewing zone, forming a series of ruffles in the gusset material as the gusset material is attached about the corner of the panel; and

as an initially sewn portion of the panel approaches the sewing zone, cutting and folding a trailing end of the gusset material and sewing the folded trailing end to the panel.
2. The method of claim 1 and wherein feeding a length of gusset material comprises engaging the gusset material with a series of pre-feed rolls and pulling the gusset material from the supply.
3. The method of claim 2 and further comprising monitoring the length of gusset material and controlling operation of the pre-feed rolls to feed the gusset material as needed to maintain a desired amount of gusset material available for sewing to the panel.

4. The method of claim 1 and wherein feeding a length of gusset material comprises passing the gusset material from the supply through a pre-flange station and attaching a flanging material to the gusset material.
5. The method of claim 1 and further comprising applying tension to the panel as it is moved into the sewing zone.
6. The method of claim 5 and wherein applying tension comprises extending a tension element into engagement with the panel to create a drag on the panel.
7. The method of claim 5 and further comprising halting the application of tension to the panel as ruffles are sewn in the gusset material as it is applied about the corner of the panel.
8. The method of claim 1 and further comprising adjusting at least one guide of the folder assembly for folding the gusset material by a desired amount.
9. The method of claim 1 and wherein receiving and directing the gusset material through a folder assembly comprises feeding the gusset material through a passage between a series of spaced folder plates and guiding the gusset material into the sewing zone.
10. The method of claim 1 and further comprising lifting and moving the folder assembly away from the sewing zone upon completion of a sewing operation.

11. A system for attaching a length of material to a panel, comprising:
 - a sewing station adapted to receive and sew the length of material to the panel, the sewing station including at least one needle defining a sewing zone;
 - an adjustable folder assembly for guiding the length of material toward the sewing zone; and
 - a ruffler mechanism positioned adjacent said sewing zone for engaging and forming a series of ruffles in the length of material at desired locations along the length of material as the length of material is sewn to the panel;wherein said folder assembly and ruffler mechanism are pivotally mounted adjacent said sewing station so as to be moveable toward and away from said sewing zone.
12. The system of claim 11 and wherein said folder assembly comprises a series of folder plates spaced from each other so as to define a passage through which the length of material is received, and at least one adjustable guide moveable laterally between said folder plates for adjusting an amount of folding of the length of material as it passes through said folder assembly.
13. The system of claim 12 and further comprising a pivoting support to which said folder plates are mounted.

14. The system of claim 12 and wherein folder plates are mounted to said ruffler mechanism and said ruffler mechanism is mounted on a pivoting support to enable said ruffler mechanism and said folder assembly to be moved away from said sewing zone.
15. The system of claim 11 and wherein said folder assembly and said ruffler mechanism are mounted on a pivoting support to enable movement of said folder assembly and ruffler mechanism away from said sewing zone.
16. The system of claim 15 and wherein said folder assembly includes an adjustable mounting to enable movement of said folder assembly with respect to said needle as needed for adjusting the position of the length of material being sewn with respect to said needle.
17. The system of claim 11 and wherein said ruffler mechanism comprises a ruffler blade and an actuator for moving said ruffler blade into engagement with the length of material as the length of material is sewn about a corner of the panel.
18. The system of claim 17 and wherein said actuator comprises an air cylinder.
19. The system of claim 11 and further comprising a tension mechanism adjacent said sewing zone for applying tension to the panel as the length of material is sewn to the panel.

20. The system of claim 19 and wherein said tension mechanism further comprises a tension member and an actuator adapted to move said tension element into and out of engagement with the panel to apply tension to the panel as the panel approaches said sewing zone.
21. The system of claim 11 and further comprising a pre-flange station upstream of said sewing station for applying a flanging material to the length of material prior to its being fed into said sewing station.
22. The system of claim 11 and further comprising a pre-feed system for feeding the length of material from a supply into the sewing station.
23. The system of claim 22 and wherein said pre-feed system comprises a series of puller rolls and a drive motor for driving at least a portion of said puller rolls for feeding a substantially continuous supply of length of material to said sewing station.
24. The system of claim 23 and further comprising a sensor positioned to monitor a slack portion of the length of material between said sewing station and said supply, wherein said sensor sends a signal indicating a reduction in the slack portion, in response to which said drive motor drives said puller rolls to feed additional amounts of the length of material as needed to maintain a desired amount of slack.
25. A method for forming and attaching a border or gusset to a work piece, comprising:

feeding a length of border or gusset material from a supply;
guiding the border or gusset material into a sewing zone;
attaching the border or gusset material to an edge of the work piece at a location
spaced from a first edge of the border or gusset material;
as a corner of the work piece approaches the sewing zone, forming a series or
ruffles in the border or gusset material as the border or gusset material is
sewn about the corner of the work piece;
continuing to sew the border or gusset material to the work piece about each
corner thereof until an initial sewing point approaches the sewing zone;
and
cutting the border or gusset material and attaching a cut edge of the border or
gusset material adjacent the initial sewing point to complete a sewing
operation.

26. The method of claim 25 and wherein guiding the border or gusset material further comprises adjusting the feeding of the border or gusset material with respect to a sewing needle at the sewing zone to set the spacing from the first edge of the border or gusset material of the location at which the border or gusset material is sewn to the work piece.
27. The method of claim 25 and wherein forming a series or ruffles in the border or gusset material comprises forming a sufficient number of ruffles to enable cupping of carton portions of the border or gusset material.

28. The method of claim 27 and further comprising inverting the work piece after the border or gusset has been sewn thereto and applying cupped corner portions of the border about each corner of a foundation frame, with the work piece and a first portion of the border on top of the foundation frame and with a second portion of the border extending downwardly therefrom along sides of the foundation frame.
29. The method of claim 25 and wherein feeding a length of border or gusset material comprises engaging the border gusset material with a series of pre-feed rolls and pulling the border or gusset material from the supply.
30. The method of claim 25 and further comprising monitoring a slack portion of border or gusset material pulled from the supply and controlling operation of the pre-feed rolls to feed the border and gusset material as needed to maintain a desired amount of slack of the border or gusset material available for sewing to the work piece.
31. The method of claim 25 and further attaching a flanging material to the border or gusset material prior to feeding into the sewing zone.
32. The method of claim 25 and wherein guiding the border or gusset material into the sewing zone includes passing the border or gusset material through an adjustable folder assembly.

33. The method of claim 32 and further comprising moving the folder assembly with respect to a sewing needle of the sewing zone to set a desired location along the border or gusset material at which the border or gusset material will be sewn to the work piece edge.